



Hot-dip galvanizing for
comprehensive and enduring
corrosion protection

METAL COATINGS



Hot-Dip Galvanizing

GalvXtra[®]— a proprietary process with proven performance

For over two centuries, hot-dip galvanizing has been used to protect steel from the destruction of metallic corrosion. The process, which has evolved over the years, continues to be a cost-effective, proven solution for extending the life and performance of fabricated steel.

North America's leading provider of hot-dip galvanizing for more than four decades, AZZ has significantly enhanced the time-tested process with GalvXtra, a proprietary zinc bath formulation which mitigates the effects of the deoxidizing process to produce the most consistent coating thickness available for an even, enduring finish.

Our four-step hot-dip galvanizing process incorporates comprehensive quality assurance measures and adheres with the international standards of the American Society of Testing and Materials (ASTM) for high-quality zinc coatings on ferrous materials, ASTM A123, ASTM A153 and ASTM B6, as well as the pertinent specifications established by the Canadian Standards Association (CSA) and the American Association of State Highway and Transportation Officials (AASHTO).

1. Preparation

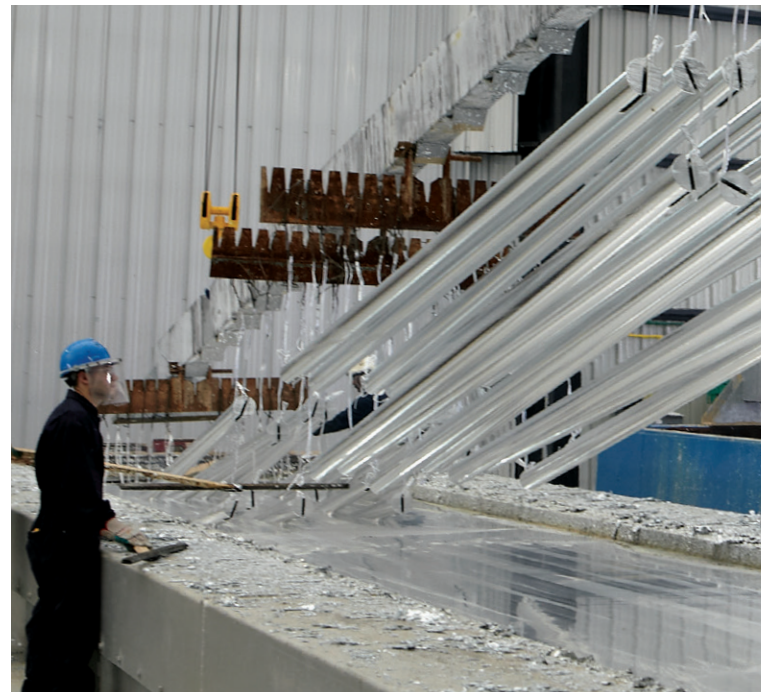
All fabricated steel that enters an AZZ galvanizing plant for processing is thoroughly inspected to ensure drainage and venting requirements are met.

2. Cleaning

Thorough surface cleaning is critical to the hot-dip galvanizing process. We begin by immersing the steel in a hot alkali solution for the removal of organic contaminants. Acid pickling is then used for the removal of rust and scale. The final step, fluxing, eliminates surface oxides to promote intermetallic development.

3. Hot-dip galvanizing

The cleaned steel is submerged in a bath of AZZ's proprietary GalvXtra formulation of molten zinc. At a temperature of 840° F (449° C), the zinc reacts with the iron on the steel's surface to form a layer of zinc-iron intermetallic alloy on all exterior and interior surfaces,



AZZ operates one of the largest galvanizing kettles in the U.S., enabling us to easily and efficiently apply our proprietary GalvXtra formulation to components up to 62 ft. long and weighing up to 60,000 lbs

providing a physical barrier, as well as cathodic protection, against corrosion. When the steel is withdrawn from the bath, excess zinc is removed by draining, vibrating, and/or centrifuging.

4. Post-dip quality inspection

The galvanized steel is cleaned, weighed, and thoroughly inspected. Calibrated instrumentation ensures compliance with ATSM standards for coating thickness and appearance.



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**ZINC
CORRODES**

30times
slower than

STEEL

Steel components treated with a zinc coating maintain their integrity for decades in even the harshest conditions with minimum maintenance requirements.

A cost-effective, sustainable solution

The cost of galvanized steel is less than that of stainless steel, painted steel, aluminum, or epoxy-coated surfaces over the life of the material, and it requires no coating maintenance.

The hardness, ductility, and adherence achieved with hot-dip galvanizing provide unmatched durability and resistance to damage from shipping, handling, and use over time. The process naturally creates a consistent coating thickness at corners and edges, unlike brushed coatings, which tend to thin in these damage-prone areas.

Hot-dip galvanizing provides heavy-duty performance with a small environmental footprint. The process utilizes naturally occurring, 100% recyclable zinc to treat steel, the most recycled material on the planet. Galvanizing significantly extends the life of steel, saving an abundance of resources and energy which would be required to replace the materials more often. The process itself is environmentally friendly with no emissions of Volatile Organic Compounds (VOCs) or hazardous pollutants.

Galvanized steel is an environmentally responsible material choice. Its use as a construction material qualifies as a green building practice eligible for certification points awarded by the Leadership in Energy and Environmental Design (LEED) rating system.

A partner who meets your performance requirements

AZZ has extensive experience and expertise in hot dip galvanizing for a broad range of applications, including:

- Agriculture
- Bridges & highways
- Construction
- Electrical utilities
- Industrial
- Original equipment manufacturers
- Petrochemicals
- Recreation
- Transportation

With proven performance in harsh environments, galvanized steel is commonly used in the storage and transportation of chemicals, as well as in freshwater, seawater, soil, and concrete. The components of steel structures too large to fit in a galvanizing bath or requiring field assembly may be cut and welded after being galvanized.

AZZ's high-quality coatings meet the performance requirements and stringent quality standards of our diverse customers. Hot-dip galvanizing can be undertaken in any weather or humidity conditions, can be completed quickly, and requires short lead times, enabling us to meet tight production schedules and avoid costly delays.

With more than 40 galvanizing operations located throughout North America, including one of the largest galvanizing kettles in the U.S., AZZ's expansive operations enable us to meet our customers' production needs while lowering transportation costs and environmental impact.

MORE THAN A SUPPLIER

AZZ is a proud partner in supporting and advancing the industries we serve, including membership or participation in the following organizations:

- American Galvanizing Association
- American Institute of Architects
- American Institute of Steel Constructors
- APC/PennDOT
- American Road and Transportation Builders Association
- Bridge Preservation Partnership
- Chemical Coaters Association International
- Farm Equipment Manufacturers Association (FEMA)
- Intermodal Association of North America
- Illinois County Engineers Association
- Indiana Fabricators Association
- Iowa County Engineers Association
- Illinois Road and Transportation Builders Association
- NACE International
- National Association of Trailer Manufacturers (NATM)
- National Ornamental and Miscellaneous Metals Association (NOMMA)
- National Recreation and Parks Association (NRPA)
- Ohio Steel Fabricators Association
- Oklahoma Structural Engineers Association (OSEA)
- Structural Engineers Association of Texas (SEAoT)
- Short Span Steel Bridge Alliance
- Society for Protective Coatings (SSPC)
- Stadium Managers Association
- Structural Steel Institute
- SW Fabricators Association (SWFA)
- Texas County Engineers Association

Innovation and superior performance in action

A long-term member of the American Galvanizers Association (AGA), AZZ has received numerous AGA awards for innovative, cost-effective solutions for a wide range of applications and harsh environments.

Award-winning project examples include:

Agricultural

- Dairy farm
- Greenhouse



Industrial

- Aggregate recycling plant
- Aggregate screening plant
- River dredging vessel
- Quarry conveyor



Petrochemicals

- Oil refinery railway bridge

Recreation

- Athletic stadium
- Racetrack
- Aquatic center



Construction

- Public parking garage

AZZ is a recognized leader in hot-dip galvanizing with the facilities, expertise, and agility to provide unmatched corrosion protection for steel structures and components throughout North America. We are committed to developing innovative, cost-effective solutions to meet the performance needs of our customers and proud of the integral role we play in creating a stronger, safer world.

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